



CORE MEMORY FACT SHEET

MODEL E-1373/1455

#10 (4/67)



WIDE-TEMPERATURE MINIATURE MEMORY

The Model E-1373/1455 is a miniature, sequential-access core memory, capable of high-rel operation over a wide temperature range in aerospace and airborne applications. The initial production units which were delivered in 1962 have operated successfully from -55°C to $+90^{\circ}\text{C}$. To date, over 150 units of this basic design have been put into service with no reported failures -- probably a record for miniature wide temperature memories.

This memory, which comprises a total envelope of only 48 1/2 cubic inches, is quite flexible in format in that it can be used as a 1540-word bit-serial storage unit or as two digital storage units of 150 words/8 bits and 144 words/1 bit. Data entry may be either bit serial or 8-bit parallel while output is bit serial.

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MINIATURE CORE MEMORIES FOR AEROSPACE, AIRBORNE AND HYDROSPACE APPLICATIONS



DI/AN CONTROLS, INC.

944 DORCHESTER AVENUE, BOSTON, MASSACHUSETTS 02125 □ (617) 288-7700 □ TWX: 710-333-0174

SPECIFICATIONS

Storage Capacity:	(1540 x 1) or (150 x 8 and 144 x 1)
Access:	Sequential
Operating Temperature:	-55°C to +100°C (type A) -20°C to +71°C (type B)
Operating Modes:	Clear/Write (Load) Read/Restore (Unload)
Bit Rate:	0 to 10 KHz
Power Consumption:	1.0W (Standby) 3.5W (at 10 KHz)
Voltage:	+12 and +25 VDC (type A) +4 and +25 VDC (type B)
Interface:	"0" = 0v "1" = +12v (type A) +4v (type B)
Size:	5.0" x 4.3" x 2.4"; (48.5 cu in.)
Weight:	2 lbs, 9 oz
Shock:	15g @11 ms
Vibration:	5g max. @50-500 cps
Applicable Specifications:	MIL-E-5400 MIL-I-26600 MIL-D-70327 MIL-E-5272 MIL-E-8189B MIL-Q-9858



CORE MEMORY FACT SHEET

MODEL E-1599

#20A (4/67)



RANDOM ACCESS AEROSPACE MEMORY FOR SCIENTIFIC PROGRAMS

DI/AN has developed the Model E-1599 primarily for aerospace environment system applications. The most important properties of these new memories are:

- (a) Low magnetic field disturbance; IMP-74 spec or better
- (b) Very low power consumption during both standby and operating modes.
- (c) Light weight, small size.
- (d) Long-mission reliability -- for 2-3 year duration in space probes and satellites.
- (e) Memory core stack wiring and interboard wiring for minimum dynamic field generation.

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MINIATURE CORE MEMORIES FOR AEROSPACE, AIRBORNE AND HYDROSPACE APPLICATIONS

DI/AN CONTROLS, INC.

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This memory has a single-plane capacity with two operating modes: Clear/Write and Read/Restore. There is a separate Address Clear input. In addition to the data output, markers are generated every time 26 bits are loaded or unloaded, and whenever addresses 3823 and 3840 are loaded or unloaded. During the Read/Restore mode, output data from the memory can be restored or new data entered on a special input line.

SPECIFICATIONS

Storage Capacity:	3840 bits
Access:	Bit serial
Operating Mode:	Read/Restore and Clear/Write
Data Rate:	50 KHz
Power:	20mW Standby 7.5W max. Operating
Voltage Requirements:	+6 and +28 VDC
Interface Levels:	"0" = 0v; "1" = 4.0v
Size:	7.09" x 5.76" x 1.33"; (55 cubic inches)
Weight:	2 lbs, 6 oz
Temperature Range:	-30°C to +85°C
Applicable Specifications:	NPC 200-3 NPC 200-4 NPC 250-1 MIL-E-16400 MIL-I-6181D MIL-S-19500
Vibration:	17g max @10-2000 cps
Additional Features:	(a) Address Clear (b) 3 Markers (one at end of memory)



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SPECIFICATIONS

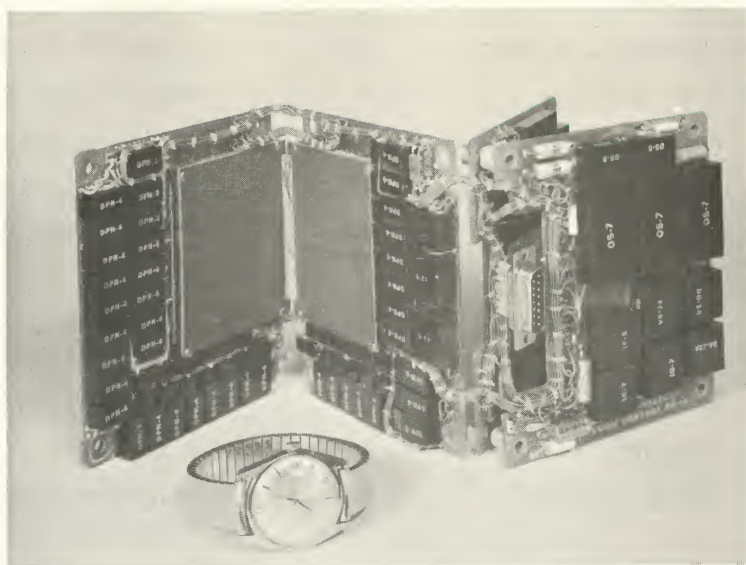
Storage Capacity:	3840 bits
Access:	Bit serial
Operating Mode:	Read/Restore and Clear/Write
Data Rate:	50 KHz
Power:	20mW Standby 7.5W max. Operating
Voltage Requirements:	+6 and +28 VDC
Interface Levels:	"0" = 0v; "1" = 4.0v
Size:	7.09" x 5.76" x 1.33"; (55 cubic inches)
Weight:	2 lbs, 6 oz
Temperature Range:	-30°C to +85°C
Applicable Specifications:	NPC 200-3 NPC 200-4 NPC 250-1 MIL-E-16400 MIL-I-6181D MIL-S-19500
Vibration:	17g max @10-2000 cps
Additional Features:	(a) Address Clear (b) 3 Markers (one at end of memory)



CORE MEMORY FACT SHEET

MODEL 6085

#40 (4/67)



SEVERE ENVIRONMENT MINIATURE MEMORY

Built for severe environment applications, this serial-access, miniature core memory features unusually high tolerance to shock as well as exhibiting wide operating temperature margins and tolerance to high vacuum. By design, this memory's 10,010 total available bits (arranged in 10 frames of 1001 bits each) of storage are ideally suited for telemetry buffering, program data storage or experimental (mission) data storage in space where the mission dictates recovery of data either while in flight or after impact.

The ultra-rugged qualities of the Model 6085 memory have been achieved by means of sophisticated memory plane encapsulation techniques. The entire memory unit is firmly packaged in an aerospace-qualified aluminum housing.

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MINIATURE CORE MEMORIES FOR AEROSPACE, AIRBORNE AND HYDROSPACE APPLICATIONS



DI/AN CONTROLS, INC.

944 DORCHESTER AVENUE, BOSTON, MASSACHUSETTS 02125 □ (617) 288-7700 □ TWX: 710-333-0174

SPECIFICATIONS

*Storage Capacity:	10 frames of 830 bits/frame with markers, or 10 frames of 1001 bits/frame with no markers
Access:	Serial
Operating Modes:	Clear/Write and Read/Restore
Data Rate:	10,000 bits/sec
Operating Temperature:	-10°F to +165°F
Power Requirements:	550mW @5 KHz 15mW standby
Voltage Requirements:	±6 volts
Logical Levels:	"0" = +6v "1" = 0v
Size (Envelope):	4.66" x 5.36" x 2.52"; (63 cu in.)
Weight:	3 lbs, 6 oz
Shock Level:	500g for 6 ms (3 orthogonal axes) 750g for 6 ms (1 axis)
Vibration:	10g max. @10-2000 cps
Acoustic Vibration:	140 db
Vacuum:	5×10^{-4} mm Hg @23.9°C
Additional Features:	(a) 10 End of Frame Markers (1 each after every 830 bits). (b) 10 Middle of Frame Markers (1 each in the middle of every 830-bit set). (c) End of Memory Marker. (d) 10,010 bits of storage available with no frame markers.



CORE MEMORY FACT SHEET

MODEL 6016

#50A (4/67)



MINIATURE RANDOM-ACCESS AIRBORNE MEMORY

Called out for use in the ANEW Aircraft Program, the Model 6016 is a low cost, highly versatile, random-access core memory suited to a wide variety of military airborne system applications. This unit's memory plane configuration is available in sizes ranging from 512 words/14 bits up to 4096 words/28 bits, and a 2 usec version is available along with the standard 8 usec unit. This light-weight, compact core memory features wide operating temperature margins as well as stringent qual-test requirements, (e.g., a burn-in of 50 hours @90°C along with a qualification test of 2000 hours @85°C). The entire unit is packaged in a rugged aerospace-type aluminum housing, specifically intended for integration into aircraft systems.

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MINIATURE CORE MEMORIES FOR AEROSPACE, AIRBORNE AND HYDROSPACE APPLICATIONS



DI/AN CONTROLS, INC.

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SPECIFICATIONS

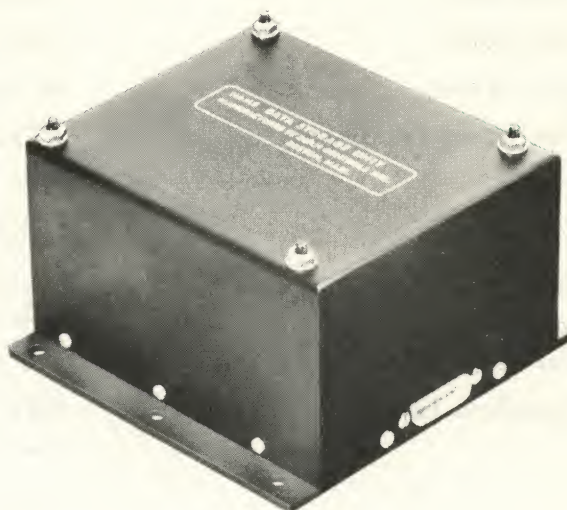
Storage Capacity:	512 words/ 14 bits; may be expanded up to 4096 words/ 28 bits
Access Modes:	Random Access; parallel read/parallel write
Operating Modes:	Clear/Write = logical "0" Read/Restore = logical "1"
Access Time:	0.9 usec (max.)
Cycle Time:	8 usec
Operating Temperature:	-55 ⁰ C to +90 ⁰ C
Power Requirements:	28.8 watts (operating)
Voltage Requirements:	+25, +12, +5, -6 VDC $\pm 5\%$
Logical Levels:	Input: "0" = 0 to +0.6v "1" = +3.8 to +4.2v Output: "0" = 0 to +0.4v "1" = +2.8 to +3.3v
Size (exclusive of envelope):	7.06" x 5.56" x 3.50"; (137.5 cu in.)
Weight:	3 lbs, 13 oz
Shock Level:	15g for 11 ms
Vibration:	10g max. @5-500 cps
Applicable Specifications:	
RFI:	MIL-I-6181
Temperature Cycling:	MIL-T-5422
Altitude:	MIL-T-5422
Shock:	MIL-T-5422
Vibration:	MIL-E-5400, MIL-T-5422
Humidity:	MIL-E-5400
Explosive Atmosphere:	MIL-T-5422
Salt Spray:	MIL-E-5422
Sand and Dust:	MIL-T-5422
Additional Specifications:	MIL-E-17555 MIL-C-8384



CORE MEMORY FACT SHEET

MODEL E-1392

#60 (4/67)



SATELLITE TELEMETRY BUFFER

This 30 thousand bit digital storage unit was developed to meet the needs of a telemetry buffer in Earth orbit applications. Variations of this design have been used successfully in a number of space programs, most notably the Pegasus Micrometeoroid Detection Satellite. Specified to provide in excess of 18 months operation in orbit, these buffers were aboard Pegasus 1, 2 & 3 (Feb. 65, Mar. 65, July 65 respectively) -- all survived the Saturn I launch environment and have continued to operate successfully to date (in Nov. 66, NASA gave the green light for a 12-month mission extension).

Key features of the Model E-1392 telemetry buffer are long mission reliability along with high storage density, low power requirements, maximum noise immunity and non-volatile storage.

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MINIATURE CORE MEMORIES FOR AEROSPACE, AIRBORNE AND HYDROSPACE APPLICATIONS



DI/AN CONTROLS, INC.

944 DORCHESTER AVENUE, BOSTON, MASSACHUSETTS 02125 □ (617) 288-7700 □ TWX: 710-333-0174

SPECIFICATIONS

Storage Capacity:	30,096 bits
Access:	Bit Serial
Read Mode:	Automatic 3-cycle read-out
Data Rate:	2048 bits/sec, Load or Unload
Sync Word:	40 bits
Operating Temperature:	-5°C to +55°C
Size:	5.6" x 4.5" x 3.9"; (98.3 cubic inches)
Weight:	3 lbs, 8 oz
Power:	<1.25W Operating at 2 KHz <85mW Standby
Voltage Requirement:	+28 ±4 VDC
Interface Levels:	NRZ "1" (level change) = 6v "0" (no change) = 0v
Applicable Specifications:	MIL-D-5028 M-ASTR-TSR-PPL-1 NPC 200-2 NPC 200-3
Shock Level:	40g @8 ms
Vibration:	10g max. @95-2000 cps



CORE MEMORY FACT SHEET

MODEL E-1585

#70 (4/67)



MINIATURE SEQUENTIAL-ACCESS AEROSPACE MEMORY

The Model E-1585 is a highly refined, miniature, sequential-access, magnetic core memory which has performed flawlessly in the BIO-SATELLITE program in storing experimental data as well as mission instructions and control signals.

This 1320 word/6 bit memory is organized in 40 blocks of 33 words per block. Each block is equipped with an address marker which is enabled after the last word in each block is either loaded or unloaded. Data entry is word-serial, bit-parallel; data readout is nondestructive. A memory search sub-mode is initiated when the mode is switched from Read/Restore to Clear/Write. In this automatic-search sub-mode, the memory is searched for a marker which indicates the last address in which data was loaded during the previous Clear/Write cycle.

The entire memory unit (composed of a memory control card, a logic control card and a data control card) is packaged in a rugged, light-weight, aerospace-qualified housing yielding an envelope of only 79.5 cubic inches.

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MINIATURE CORE MEMORIES FOR AEROSPACE, AIRBORNE AND HYDROSPACE APPLICATIONS



DI/AN CONTROLS, INC.

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SPECIFICATIONS

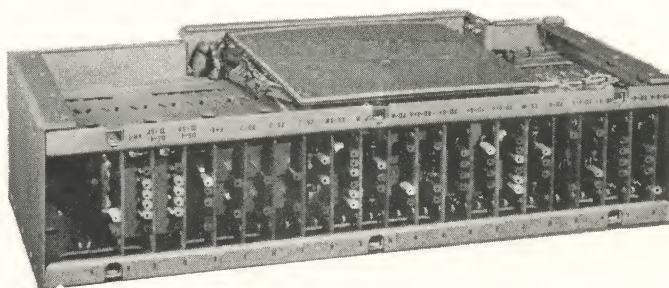
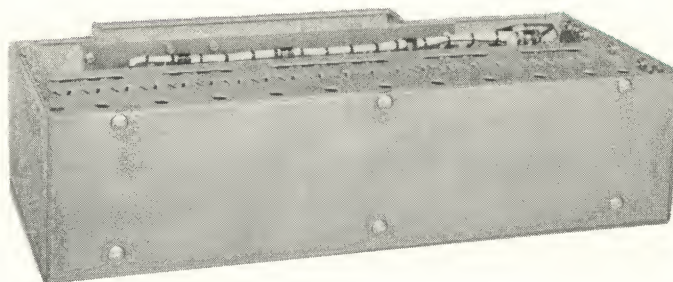
Storage Capacity:	1320 words/6 bits
Access:	Sequential
Operating Modes:	Read/Restore and Clear/Write
Data Rate:	up to 1000 words/sec
Operating Temperature:	0°F to +100°F
Power Requirements:	<1.5 watts @1000 words/sec <250mW standby
Voltage Requirements:	+28 ±1v +6 ±0.5v
Mode Control:	Read/Restore = +6v Clear/Write = 0v
Logical Levels (I/O):	"1" = +6v "0" = 0v
Size (Envelope):	7.28" x 5.81" x 1.88"; (79.5 cu in.)
Weight:	3 lbs, 11 oz
Shock Level:	30g for 12 ms
Vibration:	21g max. @100-2000 cps
Special Features:	(a) 40 Address Markers. (b) Automatic Search Mode for interlaced variable block loading. (c) Memory Busy Search (d) Nondestructive Address Reset
Applicable Specifications:	NPC 200-3 NPC 250-1 NASA/MSFC-PROC-158B NASA/MSFC-STD-154



CORE MEMORY FACT SHEET

MODEL E-1523

#110 (4/67)



SHIPBOARD BUFFER STORAGE UNIT

The Model E-1523 is a key portion of the Polaris check-out system presently in use aboard Polaris submarines to provide buffering between a digital data gathering system and a digital tape recorder. It is both compact and light-weight, and comprises a 210-word/6-bit, sequential access, magnetic core memory along with a complement of digital magnetic logic circuits, all of which provide high reliability, high logic density, maximum noise immunity, low average power to peak power ratio, non-volatile storage of data, and a proven history of over 10^9 module hours of operation without a single failure. This unit has been qual-tested for shock, vibration, humidity, temperature, attitude and noise rejection, and has been subjected to a complete reliability design analysis.

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Operating from an external power supply, this buffer has a full cycle power requirement of only 13.5 watts @15 KC. A unique application of digital magnetic clocking provides the buffer with a "travelling" address read/write operation. That is, both a fullness and an emptiness marker are locked in phase with the memory read/write address drivers. As each new word is read into the memory, the fullness marker advances one address in a sequential manner; simultaneously, stored words are read out sequentially advancing the emptiness marker one address at a time. By design, these markers can never get out of step with one another nor will they lose their place in the event of a power failure.

SPECIFICATIONS

Nomenclature:	SA-VB-INT-210/6-15-EI-FI-EC-ER
Storage Capacity:	210 words/6 bits
Addressing Mode:	Sequential Interlaced; 2 Address Counters
Data Rate:	0 to 15 KHz
Temperature:	-20 ⁰ F to +160 ⁰ F (storage) +60 ⁰ F to +100 ⁰ F (operational)
Power Requirements:	13.5 watts @15 KHz
Voltage Requirements:	+12 $\pm$ 5% VDC -12 $\pm$ 5% VDC
Logical Levels:	"0" = -10.5 $\pm$ 2.5v "1" = 0 $\pm$ 1v
Size:	16.8" x 4" x 7.7"
Weight:	12 lbs
Shock Level:	30g for 10 ms
Vibration:	1.3g @2-60 cps
Attitude:	0 ⁰ -360 ⁰ rotation about any horizontal axis
Humidity:	100% R. H. w/ condensation (storage) 90% R. H. w/o condensation (operational)
Noise Rejection:	@<1 volt in amplitude
Radio Frequency Interference:	per MIL-I-16910A
Special Features:	EI -- Empty Indicator FI -- Fullness Indicator EC -- Electronic Clear ER -- Electronic Address Reset